CLAIMS

What is claimed is:

1.   A method of representing a word formed of letters, comprising:

inputting the letters of the word on a graphical keyboard layout using a symbol that is defined by a pattern; and

recognizing the symbol by processing the pattern using a combination of a plurality of channels that selectively process different aspects of the pattern.

2.   The method of claim 1, wherein the plurality of channels comprise shape information.

3.   The method of claim 1, wherein the plurality of channels comprise location information.

4.   The method of claim 1, wherein the plurality of channels comprise a tunnel model channel.

5.   The method of claim 1, wherein the plurality of channels comprise a language context channel.

6.   The method of claim 2, wherein recognizing the symbol using shape information comprises template matching.

7.   The method of claim 2, wherein recognizing the symbol using shape information comprises feature extraction.

8. The method of claim 3, wherein recognizing the symbol using location information comprises using location matching.

9. The method of claim 8, wherein location matching comprises weighting sampling points of location from beginning to end.

10. The method of claim 4, wherein a tunnel of the word pattern comprises a predetermined width on either side of a set of virtual keys representing the letters of the word on a virtual keyboard.

11. The method of claim 4, wherein recognizing the symbol using the tunnel model channel comprises traversing keys passed by the word pattern and identifying potential word candidates by partial string matching.

12. The method of claim 4, wherein recognizing the symbol using the tunnel model channel comprises transforming a tunnel and a gesture passing the tunnel.

13. The method of claim 2, wherein recognizing the shape comprises recognizing a difference between a user's gesture trace and an ideal template of the pattern.

14. The method of claim 13, further comprising displaying the difference between the user's gesture trace and the ideal template of the pattern by morphing the user's gesture trace to the ideal template.

15. The method of claim 1, wherein the word letters comprise letters from an alphabet of any of a natural language or an artificial language.

16.   The method of claim 1, wherein the word letters comprise letters from Chinese pinyin characters.

17.   The method of claim 1, further comprising analyzing the inputting letters to differentiate between a tapping and a shorthand gesture input.

18.   The method of claim 13, further comprising comparing a normalized word pattern and a normalized gesture trace and sampling the normalized word pattern and gesture trace to a fixed number of a plurality of points; and
        measuring the plurality of points relative to each other.

19.   The method of claim 13, further comprising comparing a feature vector of the gesture trace and the feature vector of a word pattern.

20.   The method of claim 1, further comprising inputting at least one letter of a word by tapping the letter.

21.   A shorthand symbol system for representing a word formed of letters, comprising:
        a graphical keyboard layer for inputting the letters of the word using a symbol that is defined by a pattern; and
        a pattern recognition engine that recognizes the symbol by processing the pattern using a combination of a plurality of channels that selectively process different aspects of the pattern.

22.   The system of claim 21, wherein the plurality of channels comprise shape information.

23.   The system of claim 21, wherein the plurality of channels comprise location information.

24.   The system of claim 21, wherein the plurality of channels comprise a tunnel model channel.

25.   The system of claim 21, wherein the plurality of channels comprise a language context channel.

26.   The system of claim 21, wherein the plurality of channels comprise any one or more of:
     a shape information;
     a location information;
     a tunnel model channel; and
     a language context channel.

27.   The system of claim 21, wherein the word letters comprise letters from an alphabet.

28.   The system of claim 21, wherein the word letters comprise letters from Chinese pinyin characters.

29.   The system of claim 21, wherein the word patterns are based on a lexicon.

30.   The system of claim 29, wherein the lexicon comprises a very large collection of words used in a natural language.

31. The system of claim 29, wherein words in the lexicon are rank ordered by usage frequency, and more frequent words are given higher a priori probability.

32. The system of claim 29, wherein the lexicon is customized from an individual user's previous documents.

33. The system of claim 29, wherein the lexicon is customized for a specific application.

34. The system of claim 33, wherein part of the customized lexicon is based on a computer programming language.

35. The system of claim 29, wherein the lexicon is customized for a specific domain.

36. The system of claim 35, wherein part of the customized lexicon is based on medical terminology.

37. A method of constructing word representations and recognizing word input, wherein the word is formed of letters, the method comprising:

forming a word representation by connecting the letters of the words on a layout of letters;

inputting a movement trace from a sensing device; and

recognizing the trace as a word using a combination of a plurality of channels that selectively process different aspects of the trace in relation to different words and their representations.

38.   The method of claim 37, wherein the plurality of channels comprise shape information.

39.   The method of claim 37, wherein the plurality of channels comprise location information.

40.   The method of claim 37, wherein the plurality of channels comprise a tunnel model channel.

41.   The method of claim 37, wherein the plurality of channels comprise a language context channel.

42.   The method of claim 37, wherein the plurality of channels comprise any one or more of:

        a shape information;

        a location information;

        a tunnel model channel; and

        a language context channel.